

October 30, 2017

TO: Education Foundation of Indian River County
FROM: Colleen H. Lord, Ed.D. 
RE: Letter of Idea: CARS Coding Application for Reading Support

Overview/Rationale

Beachland Elementary is committed to developing the 21st century skills our students will need. The school has designed a coding continuum for kindergarten through fifth grade that will enable students to not only develop their problem solving and higher level thinking skills, but also develop communication skills for a “second language of coding”. Coding Application for Reading Support (CARS) will engage students in hands on coding experiences that require students to plan, communicate, problem solve, and record their results. Reading and English/Language Arts skills will be embedded and explicitly taught as part of the CARS project.

Targeted Population

Kindergarten through fifth grade, 470 students, will be involved in CARS. Kindergarten through second grade will complete “Coding through Stories” which will have students take a familiar book and insert commands. These commands will be followed by groups of students as they develop their coding skills. Students will then write their own stories that will have characters who travel in different directions, and they will be inserting the commands. They will be able to use Ozobots as part of CARS for coding in Kindergarten through second grade.

Third through fifth grade will develop scenarios for one another to move through the coding process. Students will read “technical” material to discover the parameters of the project, and then they will be required to develop the steps necessary for the coding. Students will use Sphero Robots to develop their coding skills. Students will use the iPads to develop the code with the Sphero Robots and Ozobots.

Kindergarten 77	Second Grade 76	Fourth Grade 82
First Grade 81	Third Grade 80	Fifth Grade 74

Budget

Item	Quantity	Total Amount
Ozobots (\$110)	15	\$1500
Consumable Materials for Grids		\$200
Sphero SPRK Edition Robots (\$135)	10	\$1350
iPads (\$325)	5	\$1625
Total amount Requested		\$4,675

Summary

The Why: Students in kindergarten through fifth grade need opportunities to problem solve, develop communication skills, and be engaged in higher level thinking processes. Coding (or programming) is a basic language in this digital age. It involves setting up step-by-step instructions that a robot or computer can follow, and thus students must be creative thinkers and problem solvers to work with coding.

The Change: CARS will provide hands on experiences for students to work through literacy-based problems (familiar stories) and develop commands during the reading. They will then set up the coding, and with the robots, they will be able to complete the process of coding. The iPads and robots will be used to confirm the coding works as it was designed in accomplishing a task. The teachers will see students highly engaged in learning that incorporates reading, math, and engineering. Students will have new communication and problem solving skills to apply in the classroom as a result of this project.

The Action: Phase One is the start-up of the project. Materials will be purchased for the classrooms. Teachers will have professional development on how to incorporate the robots (Ozobots and Spheros) in the curriculum. During a professional development session, teachers will explore the materials, and design lessons that begin in kindergarten and move through fifth grade, focusing on literacy and communication skills with the robots. Phase Two is the implementation of the lessons in the classroom. Currently students get an hour of coding through the media center. This would be expanded to include time in the classroom for coding. All students will be involved in the project. Information will be shared with parents.

Progress Monitoring

Progress monitor will occur for fidelity of the lessons and usage of the materials, as well as evidence of success by the students. Phase Three will include evaluation of the students in being able to successfully code, as well as a teacher survey on the lessons and materials provided in the project. Results will be reported through data gathered on how many students can code as appropriate for each grade level. This performance-based assessment will occur in grades kindergarten through fifth grade. Also, teacher survey and student assessment results will be shared with staff to refine the project.

Grant Oversight

The grant will be overseen by the principal and grade level chairs for kindergarten through fifth grade. Teachers are eager to put the project into the classroom, and they will be instrumental in ensuring the fidelity and effectiveness of CARS. In particular, Dianne Jellie, fourth grade teacher, and Alisa Johnson, first grade teacher, will work with teachers to gain an understanding coding and how the project will be implemented. The School Advisory Council supports the idea of increasing coding in the classroom, and they will be part of the sustainability of CARS. Additional grant funding will be sought to expand the program. CARS will challenge all students, and provide new opportunities for success throughout the school.